NASA Glenn Success Stories

Affordable, Robust Ceramic Joining Technology

Trex Enterprises Corporation, Lihue, Hawaii

TECHNOLOGY

This new way of joining allows complex shapes to be formed by joining together geometrically simple shapes. The joining technology at NASA is one of the enabling technologies for the application of silicon carbide-based ceramic and composite components in demanding and high temperature and corrosive applications.

COMMERCIAL APPLICATION

◆ Trex Enterprises has utilized NASA technology to fabricate large silicon carbide tubes to be used in the delivery of corrosive gases at high temperatures for semiconductor wafer fabrication.

◆Enables the formation of long silicon carbide tubes, which current manufacturing processes were unable to fabricate

◆Other applications: aerospace industries, energy industries,radiant heater tubes, heat exchangers, heart recuperators, electronic industries, diffusion furniture, nuclear industries

Application of ARCJoinT at Trex Enterprises for joining of SiC tubes for wafer fabrication system

SOCIAL / ECONOMIC BENEFIT

◆Affordable and flexible

◆Joins complex shapes with controllable joint thickness

◆Joints maintain good strength and integrity at high temperatures (up to 1350°C)

◆Process requires no high temperature tooling

NASA APPLICATIONS

◆ ARCJoint can be used for the production of Blade Disks (BISCK's) in cryogenic turbo pumps

◆This technology is also used for the bonding of sensors in high heat environments

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